

FACT SHEET

Proposed Modification of Underground Injection Control (UIC) Area Permit AK-1I002-A
for the Construction and Operation of Class I Non-Hazardous Industrial Waste Injection Wells
at the Northstar Oil and Gas Unit on the North Slope of Alaska

U.S. Environmental Protection Agency, Region 10
Ground Water Protection Unit, OW-137
1200 Sixth Avenue
Seattle, Washington 98101
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Introduction

BP Exploration (Alaska), Inc., known as BPX, has requested a modification of the EPA issued Underground Injection Control (UIC) permit for the construction and operation of up to two Class I non-hazardous industrial waste injection wells at the Northstar Unit. The Northstar Unit is an oil field located on a gravel island six miles offshore in the Beaufort Sea and is about 15 miles northwest of the main Prudhoe Bay field complex.

The UIC injection permit, issued on August 4, 2000, is effective until August 4, 2010. The injection well has been receiving fluids since January 2001. The Northstar injection well is drilled through the permafrost and penetrates geologic formations that contain naturally saline (brine) ground waters. Based on geophysical borehole log analyses performed by BPX, EPA has determined that the Northstar Class I injection well has not penetrated any aquifers fresh enough (greater than 10,000 total dissolved solids) to qualify for protection as underground sources of drinking water.

The UIC permit authorizes BPX to inject non-hazardous waste fluids into the naturally saline Prince Creek/Ugnu Formations at a depth of about 5000 feet or more below the land surface. During the initial phases of the field development, one constituent of the non-hazardous waste fluids is a “slurry” of pulverized rock and drilling muds that is a waste product of well drilling. As the field matures, produced saltwater is expected to constitute the vast majority of injected waste fluid.

The EPA issued UIC permit requires BPX to perform annual tests to ensure the injection well maintains mechanical integrity. The purpose of the external mechanical integrity test is to determine whether fluid movement is occurring up and along side the outside of the cased and cemented well and, if so, the extent of such movement. BPX has requested modifications to the types and operational conditions under which external mechanical integrity test procedures are performed. The current permit requires fluid movement tests be a combination of tests, including a radioactive tracer test performed in the slurry injection mode.

BPX has informed EPA that there are operational difficulties in handling radioactive tracer material on the North Slope and has also informed EPA that there is increased risk of damaging the injection well when borehole logging tools are placed in the well while slurry fluids are being injected. Finally, BPX has suggested to EPA that additional analyses be performed to observe pipe conditions during the slurry injection phase of the well operation.

Summary of Proposed Action and Permit Conditions

The proposed modified permit requires fluid movement tests be a combination of tests pre-approved by EPA that may include tracer surveys, temperature tests, noise tests, water flow log tests, borax pulse neutron log tests, other log tests, as well as radioactive tracer tests. The modification requires, at EPA's discretion, that when a slurry is being injected, annual tubular inspection tests be performed and after slurry injection has ceased, tubular inspection tests be performed every three years. The proposed modification allows for the option, but removes the requirement that the external mechanical integrity test must be based on the radioactive tracer test plus noise or temperature tests. Furthermore the proposed modification removes the requirement that tests be accomplished in the slurry injection mode.

The proposed permit language modifications (**bold**) regarding specific well conditions and operations as it pertains to mechanical integrity are as follows:

Part II C.3.b.(2) To detect movement of fluids in vertical channels adjacent to the well bore and to determine that the confining zone is not fractured, ~~a radioactive tracer survey and a temperature or noise log~~ **approved fluid movement tests** shall be conducted at an injection pressure at least equal to the maximum continuous injection pressure observed in the previous six months. ~~While the grind and inject facility is in operation, the tracer tests shall be run in the slurry injection mode by adding the tracer to the operational injection stream in sufficient concentration to ensure detection behind the casing.~~ **Approvable fluid movement tests include, but are not limited to tracer surveys, temperature logs, noise logs, water flow logs (WFL), borax pulse neutron logs (PNL), or other logs. The specific suite of fluid movement tests proposed to satisfy this requirement are subject to prior approval by the Director. Tubing inspection logs (pipe analysis logs (PAL), caliper logs, or other equivalent tests) shall be run on an annual basis during the grind and inject operations and every third year thereafter, or at the Director's discretion, to monitor condition, thickness and integrity of the down hole tubulars.** Copies of the logs shall be accompanied by a descriptive and interpretive report. Fluid movement tests are required annually beginning after the first six months of normal operation.

Public Comment

Comments were sought from the Alaska Department of Environmental Conservation (ADEC) and the Alaska Oil and Gas Conservation Commission (AOGCC) regarding the proposed modifications of the UIC permit and the associated fact sheet. The EPA is now requesting public review of the proposed permit modifications. Persons wishing to comment on the proposed permit modification may do so in writing by **December 10, 2001**. Comments should be accompanied with a basis for the comments and substantiating facts. Please also include the name, address, and telephone number of the person making comment. All written comments and requests should be submitted to EPA at the above address to the attention of Thor Cutler, Ground Water Protection Unit or via electronic mail to cutler.thor@epa.gov. After **December 10, 2001**, the EPA may choose to finalize the modification as drafted, if no substantive comments are received during the public comment period.

For further information, please contact Thor Cutler at (206) 553-1673.